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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,429	02/20/2004	Ronald D. Knudsen	210453US01 (4081-04401)	6369
37814	7590	09/28/2007		
CHEVRON PHILLIPS CHEMICAL COMPANY 5601 Granite Parkway, Suite 750 PLANO, TX 75024				
			EXAMINER MCDONOUGH, JAMES E	
			ART UNIT 1755	PAPER NUMBER
			MAIL DATE 09/28/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/783,429	Applicant(s) KNUDSEN ET AL.	
	Examiner James E. McDonough	Art Unit 1755	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5-8, 11-24, 31, 38, 46, 48 and 54-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-8, 11-24, 31, 38, 46, 48, and 54-68 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### **Original Rejection**

Claims 1-3, 5-8, 11-24, 31, 38, 43, 45-48 and 51-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reagan in view of Manzer as cited in and for the reasons of record given in paragraph 5 of the final rejection mailed 5/24/06.

Reagan discloses the invention substantially as claimed (abstract; Fig. 1; column 3, line 18 to column 3, line 33; column 6, line 58 to column 6, line 64; column 8, line 37 to column 8, line 68; column 9, line 57 to column 9, line 68; column 10, line 18 to column 10, line 22; column 11, line 11 to column 11, line 19; column 11, line 45 to column 11, line 66; column 12, line 50 to column 13, line 32; column 14, line 37 to column 14, line 68; column 15, line 55 to column 15, line 68; and column 17, line 6 to column 17, line 10)

Reagan lacks explicit disclosure that a non-halide metal alkyl can eliminate water from any of the reagents used in the preparation of its compounds, or that water may also be removed by distillation of its azeotropes with any number of solvents with which it forms azeotropes, although the disclosure is rife with references to the need to work in anhydrous conditions in order to prepare and use its catalysts.

However, Manzer explicitly teaches that organoaluminum compounds, a species of non-halide metal alkyl, can indeed remove trace water from compounds analogous to those of the present claims (column 6, line 35 to column 6, line 44). In addition, distillation of azeotropes of water using other solvents with which water forms azeotropes using Dean-Stark traps is a conventional technique for removing trace water

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from liquids, e.g. the purification of grain alcohol i.e. ethanol to 100% by addition of benzene to the 95% pure material normally obtained in the distillation of grain spirits followed by distilling this mixture which removes an azeotrope of benzene and water, leaving behind benzene and ethanol, which can be separated by ordinary distillation since benzene and ethanol do not form an azeotrope, i.e. a constant boiling mixture of two liquids.

It would have been obvious to one of ordinary skill in the art to apply the teaching Manzer to the disclosure of Reagan with a reasonable expectation of obtaining a highly-useful method of making an olefin oligomerization catalyst with the expected benefit of higher yield of the catalyst because less of its precursors are destroyed by reaction with water as an impurity in the reactants and solvents used to make the catalyst.

Claims 43, 45-46, 52 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reagan as cited above in view of Furtek, USP 4,876,229 (hereafter referred to as Furtek).

The disclosure of Reagan has been discussed above.

Reagan lacks disclosure that adsorbents can be used to remove water from e.g. solvents and liquid reactants in the preparation of its compounds.

However, Furtek teaches at col. 11, 1. 48-52, that silica gel and molecular sieves are conventional adsorbents to remove traces of water from reagents that are to be used in processes of making water-reactive compounds or compositions.

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It would have been obvious to one of ordinary skill in the art to apply the teaching of Furtek to the disclosure of Reagan with a reasonable expectation of obtaining a highly-useful method of making an olefin oligomerization catalyst with the expected benefit of higher yield of the catalyst because less of its precursors are destroyed by reaction with water as an impurity in the reactants and solvents used to make the catalyst.

### **Response to Arguments**

Applicants have amended claims 1, 23, 24, 31, 46, and 64 to include the limitation that the molar ratio of the non-halide metal alkyl to the chromium containing compound is less than about 1.5:1. This limitation reads on any and all amounts below 1.5:1. The reference of Reagan teaches that any amount of activating compound (metal alkyl) can be used (column 9, lines 1-20) and that the skilled artisan can determine how much activator to include. Therefore, these amended limitations do not serve to patentably distinguish the instant invention over the prior art.

Applicants argue that there is no teaching, suggestion, or motivation to combine the references. This is not persuasive because indeed there is a teaching, suggestion, and motivation for the combination, and applicants have not attacked this, but only offer allegation that the combination is improper.

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Applicants argue that if the composition is dried as alleged by the examiner then the composition does not contain water, acidic protons or both. This is not persuasive for at least the following reasons:

- 1.) The composition of the instant invention does not have water based on applicants own logic and arguments as claim 1 also recites that the water, acidic protons or both are removed (abated).
- 2.) Just because the water is removed (A.K.A. dried) does not mean that the acidic protons will also be removed.
- 3.) The reference are adding the same compounds to achieve the same result to an identical composition, and one skilled in the art would not expect a difference between two identical compositions made in an identical manner, absent any showing to the contrary.
- 4.) The references are rife with disclosures on the need to work in anhydrous conditions in order to prepare and use the catalyst, and one skilled in the art would not expect someone to take these extraordinarily difficult measures, if water was not a problem or if it was not present.

Applicants argue over the order of addition. This is not persuasive because one skilled in the art would recognize that once formed the catalyst would be utmost sensitive to water and acidic protons and would take the necessary steps to remove all of the water and acidic protons prior to formation of the catalyst. It is well known in organometallics/coordination chemistry that these compounds are often extremely

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sensitive to impurities such as water and acidic protons, and the literature is also rife with articles discussing the need to constantly purify after every synthesis step, and also to work in anhydrous, anoxic environments after these impurities have been removed from compounds. This is further supported by the case law below.

The change in sequence of adding ingredients would have been obvious to one of ordinary skill in the art absent evidence to the contrary. *In re Gibson* 5 USPQ 230.

Reversing the order of steps in a process does not impart patentability when no unexpected result is obtained. Ex parte Rubin (POBA 1959) 128 U.S.P.Q. 440, Cohn v. Comr. Pats. (DCDC 1966) 251 F Supp 378, 148 U.S.P.Q. 486.

In general, the transposition of process steps, or the splitting of one step into two, where the processes are substantially identical or equivalent in terms of function, manner and result, was held to not patentably distinguish the processes. Ex parte Rubin (POBA 1959) 128 U.S.P.Q. 440, Cohn v. Comr. Pats. (DCDC 1966) 251 F Supp 378, 148 U.S.P.Q. 486.

Applicants argue that the claims have the limitation that water, acidic protons, or both are abated. This is not persuasive because if applicants look back to their claims it can clearly be seen that the limitation is "abating all or a portion" which does not mean that all of the water, acidic protons, or both has to be fully abated, furthermore, the reference talk of the need for anhydrous condition and teach the use of identical compound for the abatement of the water, acidic protons, or both as is used in the instant invention, so it is not understood how applicants argue that these processes are different, other than mere allegation without any supporting evidence.

### Conclusion

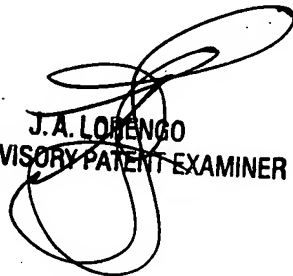
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. McDonough whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JEM 9/25/2007

  
J.A. LORENCO  
SUPERVISORY PATENT EXAMINER